JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1999, **32,** 515–518 NUMBER 4 (WINTER 1999)

ON THE DISPLACEMENT OF LEISURE ITEMS BY FOOD DURING MULTIPLE-STIMULUS PREFERENCE ASSESSMENTS

SHARON L. BOJAK AND JAMES E. CARR

UNIVERSITY OF NEVADA, RENO

Previous studies have demonstrated that when food and leisure stimuli are combined in multiple-stimulus preference assessments, individuals typically select food more often, although the leisure stimuli also have known reinforcing properties. The purpose of the current study was to replicate this effect and determine its durability by examining the effect after mealtimes. Four adults who had been diagnosed with severe mental retardation were given three initial multiple-stimulus (without replacement) preference assessments (i.e., food, leisure stimuli, and combined). All participants selected food items as the most preferred stimuli in the combined assessments. Combined assessments were then administered immediately before and after the evening meal for each participant for 1 week. The results showed similar data both before and after mealtimes.

DESCRIPTORS: stimulus preference, assessment, establishing operations, developmental disabilities

Windsor, Piché, and Locke (1994) were the first to assess the effects of the multiple-stimulus preference assessment. The authors compared this type of assessment with a forced-choice method and found that although the multiple-stimulus method took less time to administer, its effects were not as valid. DeLeon and Iwata (1996) extended the Windsor et al. study by comparing these two methods with a modified version of the multiple-stimulus method: the multiple-stimulus without replacement (MSWO) assessment. The authors found that the MSWO and forced-choice methods were similar in effectiveness, with the MSWO procedure taking less time to administer. The authors also noted that the majority of highly ranked stimuli were food items rather than leisure stimuli.

DeLeon, Iwata, and Roscoe (1997) further explored the displacement of leisure stimuli by food during MSWO assessments. The authors first conducted separate MSWO assessments with food and leisure stimuli. The most highly ranked stimuli from each of the assessments were combined into a subsequent MSWO assessment. The majority of participants' most preferred stimuli in the combined assessment consisted of food, although the leisure stimuli had previously been demonstrated to be highly preferred. The authors proposed two possible reasons for this effect: (a) Food requires less response effort to consume, and (b) the participants were generally deprived of food, thus making it a more salient stimulus. The first goal of the current study was to replicate the displacement of leisure stimuli by food in MSWO assessments. The second goal was to explore the durability of this effect, and to provide some data on its possible mechanism, by conducting assessments before and after meals.

This study is based on a master's thesis conducted by the first author, under the supervision of the second author, at the University of Nevada, Reno. We thank David Pyles and Larry Williams for their helpful comments on an earlier version of the manuscript. A list of the stimuli used during this study is available from the second author.

Address correspondence to James E. Carr, who is now at the Department of Psychology, Western Michigan University, Kalamazoo, Michigan 49008-5052. (E-mail: jim.carr@wmich.edu).

METHOD

Four adults who had been diagnosed with severe mental retardation participated in the study. Darla, Pam, David, and Conner were 37, 36, 29, and 44 years of age, respectively, at the beginning of the study. All participants were ambulatory and had no evidence of sensory impairments. Sessions were conducted in a room in their residential setting that contained a table and several chairs. For each participant, 16 stimuli were chosen (eight food stimuli and eight leisure stimuli) from the results of a modified Reinforcer Assessment for Individuals with Severe Disabilities (Fisher, Piazza, Bowman, & Amari, 1996).

Each participant completed 13 MSWO assessments across two phases of the study (described below). Procedures were similar to those reported by DeLeon et al. (1997). An array of eight stimuli was placed on a table in front of the participant. The experimenter then prompted the participant to choose one item. The participant was allowed to consume the piece of food or interact with the leisure stimulus for 30 s. Selected stimuli were not replaced in the array. After a selection was made and the participant had access to the stimulus, the order of the remaining stimuli in the array was then rearranged. Trials continued until all stimuli had been selected. The primary dependent measure was calculated as the percentage of trials in which a stimulus was chosen given its availability (percentages were then ranked). A second observer independently recorded the order in which each stimulus was chosen for at least 25% of each participant's assessments. Interobserver agreement was calculated using the point-by-point method and was 100% for each participant.

During the first phase, each participant initially completed two MSWO assessments, one containing the eight food stimuli and the other containing the eight leisure stimuli. The four most preferred stimuli identified by each of these assessments were then incorporated into a third MSWO assessment. All three of these assessments were conducted consecutively between mealtimes for each participant to avoid confounding effects from naturally occurring establishing operations.

During the second phase, the combined MSWO assessment (i.e., food and leisure items) was conducted across 5 consecutive days, immediately before and after the evening meal, yielding 10 assessments. Vollmer and Iwata (1991) demonstrated that the consumption of normal meals (combined with additional postmeal consumption periods) produced weakened reinforcement effects (i.e., satiation) with a previously acquired operant.

RESULTS AND DISCUSSION

The results of the first phase are depicted in Figure 1. The most highly ranked stimuli from the food and leisure-item assessments are depicted, along with their ranks from the combined assessment. For all participants, the food items were ranked first (highest) through fourth in the combined assessment, with the leisure items ranked fifth through eighth. These data replicate the similar displacement reported by DeLeon et al. (1997). The results of the second phase are also depicted in Figure 1. None of the stimuli changed more than approximately one rank following the evening meals for each participant. In addition, the food stimuli were not consistently ranked lower or the leisure stimuli ranked higher following evening mealtimes.

Although the current study successfully replicated the effects reported by DeLeon et al. (1997), no differences were found in the effects as a result of an intervening period of food consumption. We can offer two inter-

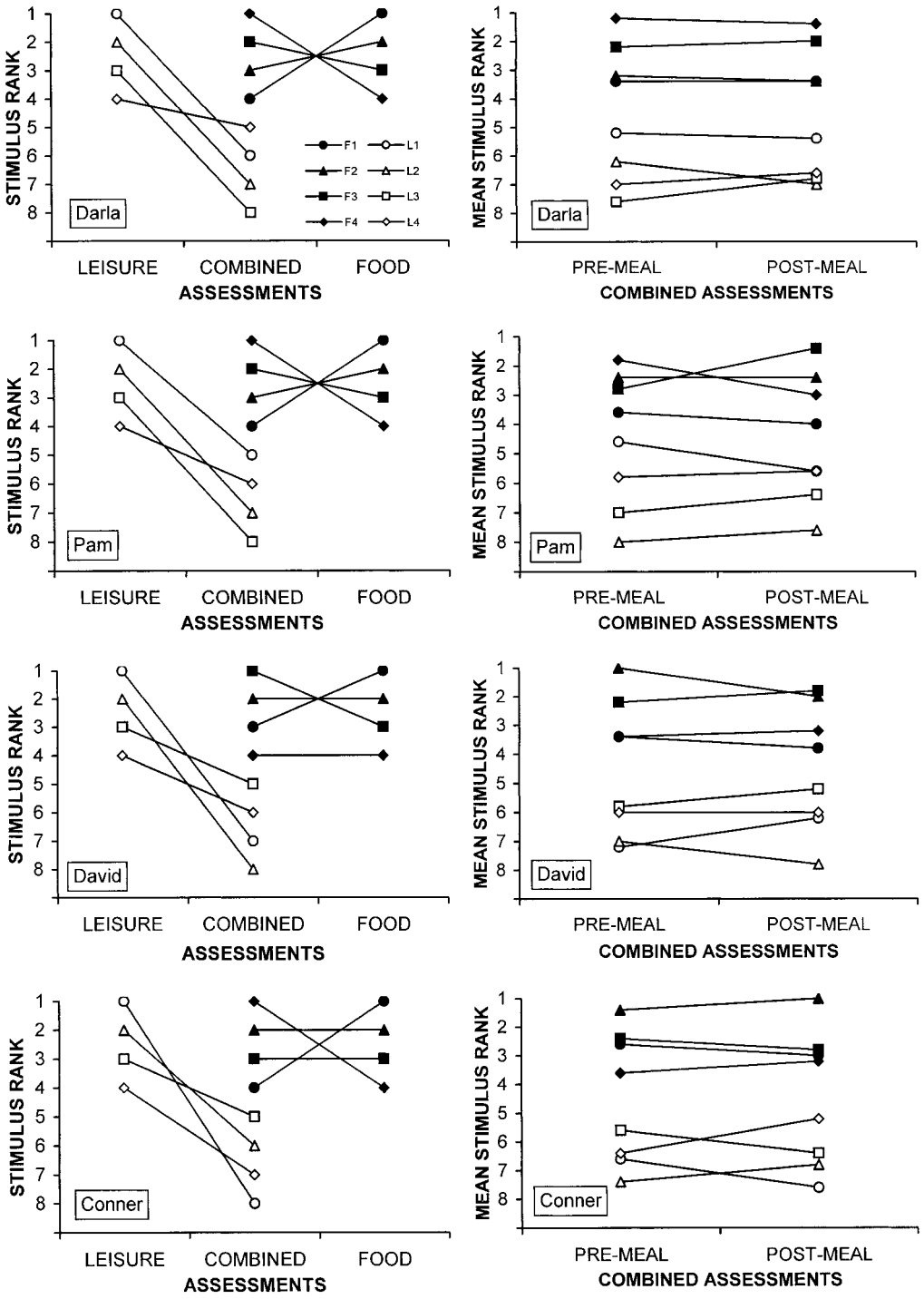

Figure 1. Results of the initial food, leisure stimulus, and combined assessments for each participant (left column) and results of the pre- and postmeal combined assessments for each participant (right column). F1 = the most highly ranked stimulus in the initial food assessment. L1 = the most highly ranked stimulus in the initial leisure stimulus assessment.

pretations of this result. First, it is possible that the evening meals were not sufficient in quantity or quality to produce satiation with respect to the food stimuli used in the MSWO assessments. An additional period of free access to the food before the postmeal assessments would have strengthened the inference that the postmeal periods were indeed associated with satiation (cf. Vollmer & Iwata, 1991). Similarly, data on meal consumption (e.g., quantity) were not collected. These data would have lent confidence to the putative independent variable (i.e., satiation). One limitation of the current study was that the postmeal assessments consisted of relatively brief exposures to food. It is unclear whether the assessment data would have changed with greater access to food or more trials within the assessments.

A second possible explanation for the lack of differentiation between pre- and postmeal assessment results is that the displacement of leisure stimuli by food is not a function of the establishing operations for food, but instead is a function of the reduced response effort required to consume food. As mentioned earlier, this possibility was proposed by DeLeon et al. (1997). However, this is a complex question that would require an extensive series of experiments to provide an answer. Several additional variables might be considered for future research in this area. First, the effects of satiation could be further explored by varying the amount of food delivered in the MSWO assessments. Second, it is possible that greater preference for food might be a function of individuals having a longer history with food compared with leisure items. This possibility could be explored using varied and controlled histories with stimuli prior to assessment.

REFERENCES

DeLeon, I. G., & Iwata, B. A. (1996). Evaluation of a multiple-stimulus presentation format for assessing reinforcer preference. *Journal of Applied Behavior Analysis, 29,* 519–533.

DeLeon, I. G., Iwata, B. A., & Roscoe, E. M. (1997). Displacement of leisure reinforcers by food during preference assessments. *Journal of Applied Behavior Analysis, 30,* 475–484.

Fisher, W. W., Piazza, C. C., Bowman, L. G., & Amari, A. (1996). Integrating caregiver report with a systematic choice assessment to enhance reinforcer identification. *American Journal on Mental Retardation, 101,* 15–25.

Vollmer, T. R., & Iwata, B. A. (1991). Establishing operations and reinforcement effects. *Journal of Applied Behavior Analysis, 24,* 279–291.

Windsor, J., Piché, L. M., & Locke, P. A. (1994). Preference testing: A comparison of two presentation methods. *Research in Developmental Disabilities, 15,* 439–455.

Received December 17, 1998
Final acceptance August 3, 1999
Action Editor, Cathleen C. Piazza